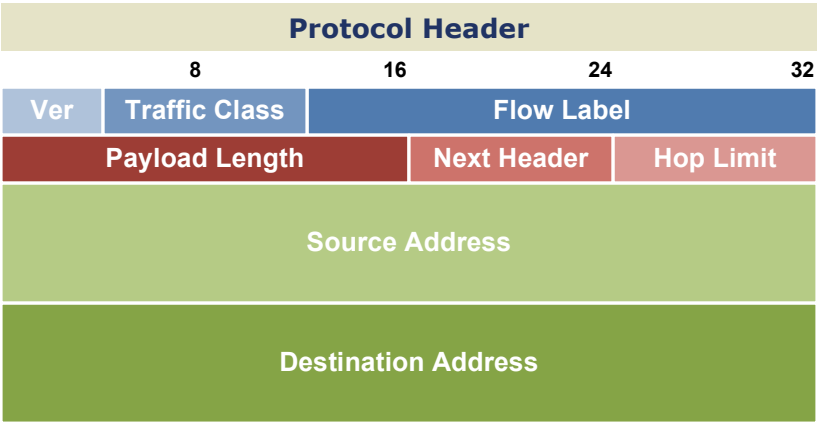


IPv6



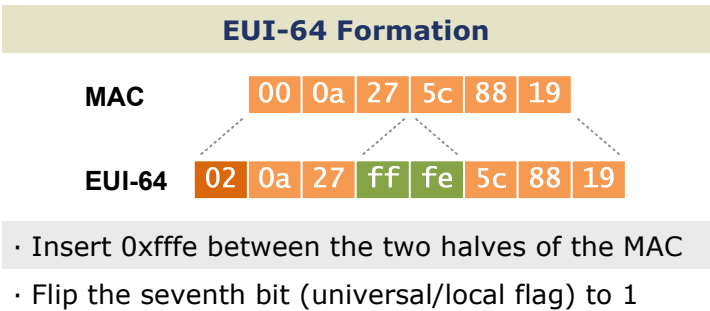
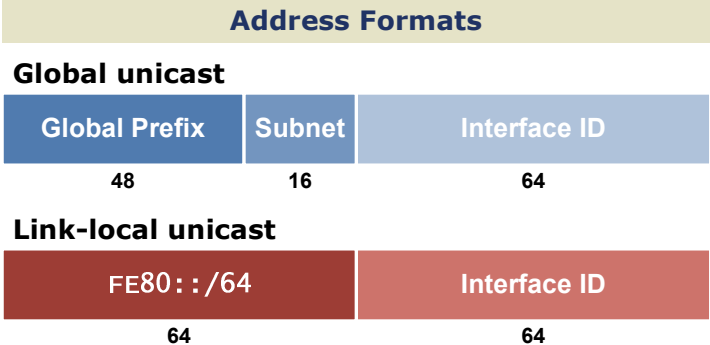
- Version** (4 bits) · Always set to 6
- Traffic Class** (8 bits) · A DSCP value for QoS
- Flow Label** (20 bits) · Identifies unique flows (optional)
- Payload Length** (16 bits) · Length of the payload in bytes
- Next Header** (8 bits) · Header or protocol which follows
- Hop Limit** (8 bits) · Similar to IPv4's time to live field
- Source Address** (128 bits) · Source IP address
- Destination Address** (128 bits) · Destination IP address

- Address Types**
- Unicast** · One-to-one communication
- Multicast** · One-to-many communication
- Anycast** · An address configured in multiple locations

Multicast Scopes	
1 Interface-local	5 Site-local
2 Link-local	8 Org-local
4 Admin-local	E Global

Special-Use Ranges	
::0	Default route
::128	Unspecified
::1/128	Loopback
::/96	IPv4-compatible*
::FFFF:0:0/96	IPv4-mapped
2001::/32	Teredo
2001:DB8::/32	Documentation
2002::/16	6to4
FC00::/7	Unique local
FE80::/10	Link-local unicast
FEC0::/10	Site-local unicast*
FF00::/8	Multicast
* Deprecated	

- Address Notation**
- Eliminate leading zeros from all two-byte sets
 - Replace up to one string of consecutive zeros with a double-colon (::)



- Extension Headers**
- Hop-by-hop Options (0)**
Carries additional information which must be examined by every router in the path
- Routing (43)**
Provides source routing functionality
- Fragment (44)**
Included when a packet has been fragmented by its source
- Encapsulating Security Payload (50)**
Provides payload encryption (IPsec)
- Authentication Header (51)**
Provides packet authentication (IPsec)
- Destination Options (60)**
Carries additional information which pertains only to the recipient

- Transition Mechanisms**
- Dual Stack**
Transporting IPv4 and IPv6 across an infrastructure simultaneously
- Tunneling**
IPv6 traffic is encapsulated into IPv4 using IPv6-in-IP, UDP (Teredo), or Intra-Site Automatic Tunnel Addressing Protocol (ISATAP)
- Translation**
Stateless IP/ICMP Translation (SIIT) translates IP header fields, NAT Protocol Translation (NAT-PT) maps between IPv6 and IPv4 addresses